

### **REMARKS**

Applicants appreciate the Examiner's thorough review of the present application, and respectfully request reconsideration in light of the preceding amendments and the following remarks.

Claims 10-14, 20-22, 24, and 26-31 are pending in the application. Non-elected claim 16 has been cancelled. Claims 15 and 23 have been cancelled without prejudice or disclaimer. Claim 27 has been rewritten in independent form. Independent claims 10-20 have been amended to better define the claimed invention. New claims 32-35 have been added to provide Applicants with the scope of protection to which they are believed entitled. The new claims are readable on the elected invention. FIG. 1 has been revised to be consistent with the specification. No new matter has been introduced through the foregoing amendments.

The objection to the drawings, the 35 U.S.C. 112, *first paragraph* rejection of claim 23, and the 35 U.S.C. 112, *second paragraph* rejection of claim 27 are either moot or believed overcome in view of the above amendments.

**Claims 10-12, 14, 20-22, 24, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Glenn et al.* (6,266,197) in view of *Boon et al.* (2004/0041221A1).**

#### **As to independent claim 10**

The limitation that the window is mounted **directly** on the optical element **by said transparent adhesive layer which is disposed between the window and the optical element** is not taught or suggested by the applied references. The added feature is supported by FIG. 5 of the application as filed. An advantage of the claimed structure is that the light transmitting through the window of amended claim 10 will pass through no other element before interacting with the optical element. Therefore, the encapsulant of the claimed device can be made of an opaque material as recited in claim 13, because it does not obstruct the light passing through the

window to the optical element of the chip. The applied references do not fairly teach or suggest the above claimed limitation and fail to achieve the disclosed advantage.

In particular, the window 122 of *Glenn* is not mounted on the sensor chip 106 as presently claimed. Instead, the window 122 of *Glenn* is mounted over chip 106. Since the structure of *Glenn* is distinguishable from the claimed structure of claim 10, the applied reference cannot have the advantage achievable by the claimed invention. In particular, assuming that *Glenn* is modifiable to include the *Boon* encapsulant 32, the *Boon* encapsulant in the combined device would be disposed between the *Glenn* chip 106 and the *Glenn* window 122. As a result, the light transmitting through the window 122 of *Glenn* will have to further pass through the *Boon* encapsulant before interacting with the *Glenn* chip 106. This structure will result in higher optical loss due to the presence of the encapsulant between the window and the chip.

Finally, since the *Boon* encapsulant would be placed between the *Glenn* window and chip in the combined device, the encapsulant must be made of a transparent material, whereas the encapsulant in the device of claim 13 can be made of an opaque material as discussed above.

For the reasons advanced above, the amended claim 10 should be considered patentable over *Glenn* in view of *Boon*.

The Examiner's reliance on *Kaldenberg* (U.S. Patent No. 5,897,338) for the claimed adhesive layer is noted. Applicants respectfully submit that *Kaldenberg* fails to teach or suggest (i) directly mounting the window on the optical element by way of a (ii) transparent adhesive layer as recited in independent claim 10.

As can be seen in FIG. 4 of *Kaldenberg*, the reference teaches a structure similar to the structure disclosed in FIG. 2 of *Glenn*, i.e., the window (26, FIG. 4 of *Kaldenberg*) is mounted on the supporting wall (24 in FIG. 4 of *Kaldenberg*), rather than on the chip (12, FIG. 4 of *Kaldenberg*) as recited in claim 10. The *Kaldenberg* reference only adds that the window (26, FIG. 4 of *Kaldenberg*) is mounted on the supporting wall (24 in FIG. 4 of *Kaldenberg*) by way of an

adhesive layer (28 in FIG. 4 of *Kaldenberg*). Thus, a person of ordinary skill in the art learning of the teachings of *Kaldenberg* would have been motivated at best to use an adhesive layer, such as 28 in FIG. 4 of *Kaldenberg*, to bond the *Glenn* window 122 to the supporting wall 124. The person of ordinary skill in the art would not have been motivated to directly bond the *Glenn* window 122 to the chip 110 using an adhesive layer, because *Kaldenberg* does not teach or suggest such.

*Kaldenberg* also fails to teach or suggest a transparent adhesive layer. As can be seen in FIG. 4 of *Kaldenberg*, adhesive layer 28 is present in areas where light rays cannot pass through due to the support/encapsulant 24. Therefore, adhesive layer 28 needs not be made transparent as presently claimed.

Accordingly Applicants respectfully submit that amended claim 10 is patentable over the applied art of record.

Claims 11, 12, 14 and 26 depend from claim 10 and are considered patentable at least for the reasons advanced with respect to claim 10. These claims are also patentable on their own merits since these claims recite other features of the invention neither disclosed, taught nor suggested by the applied references.

#### **As to claim 12**

The Examiner's allegation that *Glenn* teaches a ledge (portion of 226) for securing the window in the encapsulant of the prior device is not well-founded. First, the claimed ledge locates at the claimed window rather than at a support. The applied references do not teach or suggest that a ledge can be located at a window. Additionally, as discussed above with respect to claim 10, in the Examiner's combined device, the *Boon* encapsulant would be disposed between the *Glenn* chip 106 and the window 122. In other words, the Examiner's combined device would include window 122 completely disposed above encapsulant 32 imported from *Boon*. Thus, the ledge of window 122 could not be secured in the encapsulant as presently claimed.

**As to independent claim 20**

The claimed optical semiconductor package recites that at least a portion of the encapsulant is formed directly on the substrate. The Examiner alleged that *Boon* et al. teach in figure 4 and related text an encapsulant 32 formed on the substrate, encapsulating the chip 22, for fixing the window 6 and for hermetically fixing the support 2 on the substrate. However, *Boon* et al. fail to disclose in figure 4 that at least a portion of the encapsulant is formed directly on the substrate. Therefore, amended claim 20 is distinguishable from *Glenn* in view of *Boon*.

**Claims 13 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Glenn et al.* and *Boon et al.* and further in view of *Adams* (4,732,042).**

**As to claim 13**

Claim 13 depends from claim 10 and is considered patentable at least for the reasons advanced with respect to claim 10.

**As to claim 23**

Claim 23 has been cancelled.

**Claims 15 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Glenn et al.* and *Boonet al.* and further in view of *Kaldenberg* (5,897,338).**

**As to claims 15 and 27**

Claim 15 has been canceled.

Claim 27 has been rewritten in independent form and directs to an optical semiconductor package, in which a transparent adhesive layer directly, physically contacts both the lower surface of said window and an upper surface of said optical sensor of said chip and attaches the lower surface of said window and the upper surface of said optical sensor together. The applied references fails to teach or suggest at least the highlighted limitations of claim 27 for the reasons

advanced above with respect to amended claim 10.

**As to claims 21, 22, 24 and 28**

Claims 21, 22, 24 and 28 depend from claim 20, and are considered patentable at least for the reasons advanced with respect to claim 20.

**As to claim 26**

Claim 26 depends from claim 10 and is considered patentable at least for the reasons advanced with respect to claim 10.

**Claims 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Glenn et al.* in view of *Okada et al.* (4,838,089).**

**As to independent claim 29**

The Examiner's attempt to read element 18 of *Okada et al.* on the claimed optical sensor is inappropriate because the element 18 in *Okada et al.* is a pressure sensor, rather than an optical sensor as presently claimed. The art rejection relying on *Okada et al.* is therefore inappropriate and should be withdrawn.

In addition, the element 28 in *Okada et al.* is a shielding member that is airtightly attached to sensor board 12. Shielding member 28 is formed of elastic sealant, e.g., nitrile rubber (*see* column 3, lines 51-53 in *Okada et al.*). In other words, shielding member 28 in *Okada et al.* is not disclosed or suggested to be capable of functioning as a supporting wall and is not deemed readable on the claimed supporting wall.

Furthermore, the element 32 in *Okada et al.* is a through-hole formed in the housing 10. The hole 32 must be kept open so that the surrounding pressure can be sensed and should not be closed by a window. Accordingly, it would not have been obvious to incorporate the window of *Glenn et al.* into the device taught by *Okada et al.* as suggested by the Examiner.

For any of the reasons advanced above, independent claim 29 is patentable over the applied references.

Claims 30, 31, and 35 depend from claim 29 and are considered patentable at least for the reasons advanced with respect to claim 29. These claims are also patentable on their own merits since these claims recite other features of the invention neither disclosed, taught nor suggested by the applied art.

**As to claim 31**

The Examiner's obviousness rationale is not persuasive, because if the pressure sensor of *Okada et al.* is placed in a hermetically sealed cavity, it would be inoperable and unsatisfactory for its intended purpose of detecting the surrounding pressure. The correct reading of *Okada et al.* is that the pressure sensor of the reference must not be placed in a hermetically sealed cavity in the presently claimed manner.

**As to claim 30**

The 35 U.S.C. 103(a) rejection of claim 30 as being unpatentable over Glenn et al. and Okada et al. further in view of Boon et al is traversed at least for the reasons advanced with respect to claim 29.

**As to new claim 35**

The applied references do not fairly teach or suggest the claimed first and third sections extending upwardly from the substrate and in different directions, i.e., toward and away from the window. The claimed third section finds support in FIG. 6 at 540.

**As to new claims 32-34**

These claims depend from claim 27, and are considered patentable at least for the reasons advanced with respect to amended claim 27. Claim 34 is also patentable on its own merit since the

applied references fail to teach or suggest the claimed light path that does not extend through said encapsulant. As discussed above, the light paths in the Examiner's suggested combination of *Glenn* and *Boon* must go through the *Boon* encapsulant.

Each of the Examiner's rejections has been traversed/overcome. Accordingly, Applicants respectfully submit that all claims are now in condition for allowance. Early and favorable indication of allowance is courteously solicited.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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